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CLAIMS:

1. A gas separator member for a fuel cell comprising a layer of solid oxide electrolyte, an anode layer and a cathode layer, the gas separator member having an anode side and a cathode side and comprising a layer of copper or copper-based alloy having a layer of oxidation-resistant material on the cathode side.
2. A gas separator member according to claim 1 wherein the layer of copper or copper-based alloy has a thickness in the range of from about 0.1mm to about 4mm.
3. A gas separator member according to claim 2 wherein the layer of copper has a thickness in the range of from about 0.1mm to about 1mm, preferably about 0.25mm to about 1mm, more preferably from about 0.4mm to about 0.7mm.
4. A gas separator member according to claim 1 or claim 2 wherein the copper-based alloy comprises copper alloyed with up to a maximum of 50 wt%, preferably up to a maximum of or about 20 wt%, of one or more alloying elements selected from the group consisting of Al, Ni, Zn, Sn, Fe, Be, Ag, Au, Mn, Si, P, and Pb.
5. A gas separator member according to any one of the preceding claims wherein the layer of oxidation resistant material has a thickness in the range of about 50 to about 1000 microns, preferably up to 200 microns, more preferably up to 100 microns.
6. A gas separator member according to any of the preceding claims wherein the layer of oxidation resistant material is selected from the group consisting of a foil attached to the layer of copper or copper-based alloy, a coating on the layer of copper or copper-based alloy and a substrate onto which the layer of copper or copper-based alloy is coated.
7. A gas separator member according to claim 6 wherein the layer of oxidation-resistant material is a foil or a substrate and comprises a heat resistant steel.

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8. A gas separator member according to claim 7 wherein the heat resistant steel is coated with alumina on the cathode side.
- 5 9. A gas separator member according to claim 7 wherein the heat resistant steel contains at least 4 wt% aluminium and forms a surface layer of alumina at least at the operating temperature of the fuel cell.
- 10 10. A gas separator member according to claim 6 wherein the layer of copper or copper-based alloy is coated with plural layers on the cathode side which together form the layer of oxidation-resistant material.
11. A gas separator member according to claim 6 wherein the oxidation resistant material comprises Al_2O_3 applied to the layer of copper or copper-based alloy as an alumina coating.
- 15 12. A gas separator member according to claim 6 wherein the oxidation resistant material comprises Al_2O_3 applied to the layer of copper or copper-based alloy as an aluminum coating which is subsequently oxidised.
- 20 13. A gas separator member according to claim 12 wherein the aluminium coating is at least partly diffused into a cathode-side surface portion of the layer of copper or copper-based alloy prior to being oxidised.
- 25 14. A gas separator member according to any one of the preceding claims which includes a protective layer on the anode side of the layer of copper or copper-based alloy.
- 30 15. A gas separator member according to claim 14 wherein the protective layer is of heat resistant steel which may optionally be coated with alumina on the anode side or contain at least 4 wt% aluminum so as to form a surface layer of alumina at least at the operating temperature of the fuel cell.

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16. A gas separator member according to claim 15 wherein the heat resistant steel protective layer is in the form of a foil.
17. A gas separator member according to claim 14 wherein the protective layer comprises Al_2O_3 applied to the layer of copper or copper-based alloy as an alumina coating.
18. A gas separator member according to claim 14 wherein the protective layer comprises Al_2O_3 applied to the layer of copper or copper-based alloy as an aluminum coating which is subsequently oxidised.
19. A gas separator member according to claim 18 wherein the aluminum coating is at least partly diffused into an anode-side surface portion of the layer of copper or copper-based alloy prior to being oxidised.
20. A gas separator member according to claim 14 wherein the protective layer is made up of plural layers, namely a metal barrier layer applied to the layer of copper or copper-based alloy and formed of a material selected from the group consisting of W, Ta, Nb and an alloy of one or more of said metals which do not dissolve into the layer of copper or copper-based alloy, an intermediate layer of Ag on the metal barrier layer, and a barrier layer on the intermediate layer formed of a metal selected from the group consisting of Ni, a noble metal except Ag and an alloy of one or more of Ni and noble metals except Ag.
21. A gas separator member for a fuel cell comprising a layer of solid oxide electrolyte, an anode layer and a cathode layer, the gas separator member being formed of aluminium bronze.
22. A gas separator member according to claim 21 wherein the aluminium bronze contains at least 5 wt% Al.

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23. A gas separator member according to claim 21 or 22 having a thickness in the range of from about 1 mm to about 4 mm, preferably to about 2 mm.
- 5 24. A gas separator member according to any one of claims 21 to 23 which has been heated to at least 650°C to form an alumina surface layer on a cathode side and, optionally, on an anode side thereof.
- 10 25. A planar fuel cell stack including at least two planar solid oxide fuel cells each having a layer of solid oxide electrolyte, an anode layer on one side of the electrolyte layer and a cathode layer on the other side of the electrolyte layer, and a respective gas separator member between the at least two fuel cells, wherein the or each gas separator member is in accordance with any one of the preceding claims.